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(71)Applicant : AIWA CO LTD

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(72)Inventor : MORIMURA YASUO

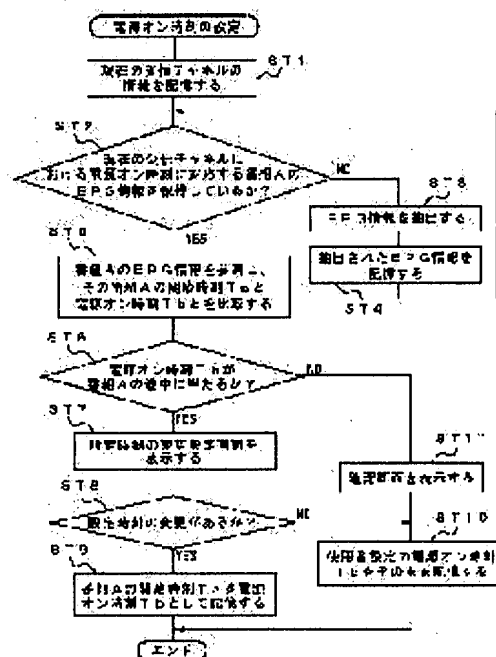
(54) APPARATUS AND METHOD FOR RECEIVING PROGRAM DATA

(57)Abstract:

PROBLEM TO BE SOLVED: To prevent a system from becoming a power-on state in the middle of a program and to prevent the feeling of unpleasantness from being given to a user when power on time on an on timer function is set.

SOLUTION: It is decided whether EPG information on a program (program A) corresponding to power-on time which is set is kept in a storage medium. When it is not kept, EPG information is extracted from broadcast data and is stored in a storage medium (ST2 to STY). EPG information of the program A is referred to and power-on time Tb which is set is compared with the start time Ta of the program A (STY). When power-on time Tb is later than the start time Ta of the program A and power-on time Tb is in the middle of the program A, a change setting picture for selecting whether power-on time Tb is changed to the start time Ta of the program A or not is displayed (ST6 and ST7). When the change of time is selected, power-on time Tb which is set is automatically changed to the start time Ta of the program A (ST8 and ST9).

電源オン時刻設定時の制御動作



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- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention is applied to for example, a digital satellite broadcasting service receiver etc., and relates to the receiving set and the receiving approach of suitable program data. When the power-source ON time of day set up hits in detail in the middle of the predetermined program corresponding to the power-source ON time of day, the program data sink which was going to prevent being in the condition of power-source ON in the middle of a program, and giving a user displeasure is started by making it selectable to change the power-source ON time of day set up at the start time of the predetermined program. Moreover, as the power-source OFF time of day set up is the predetermined program to which it is viewing and listening now, when hitting, the program data sink which was going to prevent being in the condition of power-source OFF in the middle of a program, and giving a user displeasure is started by making it selectable to change the power-source OFF time of day set up at the end time of the predetermined program.

[0002]

[Description of the Prior Art] By digital satellite broadcasting service, the program of many channels (program) is transmitted by time sharing in the same frequency band. In a digital satellite broadcasting service receiver, the program data of the predetermined channel chosen from the received broadcast signal by the user are extracted, and while the image of the predetermined channel is displayed, voice is outputted.

[0003] Conventionally, the thing with an on-timer function or an off timer function is proposed as a digital satellite broadcasting service receiver mentioned above. An on-timer function is automatically made into the condition of power-source ON from the condition of power-source OFF at the power-source ON time of day set up by the user. Moreover, an off timer function is automatically made into the condition of power-source OFF from the condition of power-source ON at the power-source off time of day set up by the user.

[0004]

[Problem(s) to be Solved by the Invention] By the way, in case the power-source ON time of day and power-source off time of day which were mentioned above are set up, the case where the time of day (a part for OO [At the time of OO]) which turns on or turns off a power source is set up, and time amount (after OO part) until it turns on or turns off a power source may be set up. Thus, when the power-source ON time of day and power-source off time of day which were set up hit in the middle of a program, in the middle of a program, a power source serves as ON or OFF, and is unpleasant for a user.

[0005] So, in this invention, it will be in a power-source ON state or a power-source OFF state in the middle of a program, and aims at offering the program data sink which can prevent giving a user displeasure.

[0006]

[Means for Solving the Problem] A channel selection means by which the program data sink concerning this invention chooses a receiving channel, A data extraction means to extract the program data of the

receiving channel chosen from the received broadcast signal with the above-mentioned channel selection means, An information extract means to extract program guide information from the received broadcast signal, An information storage means to memorize to a storage the program guide information extracted with this information extract means, While considering as the condition of power-source ON from the condition of an ON time-of-day setting means to set up power-source ON time of day, the actuation means for performing power-source off actuation, and power-source OFF at the power-source ON time of day set up The control means controlled so that a data extraction means extracts the program data in the receiving channel at the time of power-source OFF, The program guide information on the predetermined program concerning the program data which are memorized by the storage and which are extracted with the data extraction means is referred to. When judged with it being satisfied with a time-of-day condition judging means to judge whether the conditions of hitting as the power-source ON time of day set up is that predetermined program are satisfied, and this time-of-day condition judging means of the above-mentioned conditions, When changing the state-transition means which makes it the selection condition which a user can choose whether to change the power-source ON time of day by which a setup is carried out [above-mentioned], and this power-source ON time of day by which a setup is carried out [above-mentioned] in the state of selection is chosen, It has a setting time change means to change the power-source ON time of day by which a setup is carried out [above-mentioned] at the start time of a predetermined program.

[0007] Moreover, the program data receiving approach concerning this invention The 1st process which chooses a receiving channel, and the 2nd process which extracts the program data of the receiving channel chosen from the received broadcast signal at the 1st process, The 3rd process which extracts program guide information from the received broadcast signal, and the 4th process which memorizes to a storage the program guide information extracted at this 3rd process, While considering as the condition of power-source ON from the condition of the 5th process which sets up power-source ON time of day, the 6th process which performs power-source off actuation, and power-source OFF at the power-source ON time of day set up The 7th process controlled to extract the program data in the receiving channel at the time of power-source OFF from the broadcast signal by which reception was carried out [above-mentioned], The program guide information on the predetermined program concerning the program data which are memorized by the storage and which are extracted at the 2nd process of the above is referred to. When judged with it being satisfied with the 8th process which judges whether the conditions of hitting as the power-source ON time of day by which a setup is carried out [above-mentioned] is the above-mentioned predetermined program are satisfied, and this 8th process of the above-mentioned conditions, When the 9th process which makes it the selection condition which a user can choose whether to change the power-source ON time of day by which a setup is carried out [above-mentioned], and changing this power-source ON time of day by which a setup is carried out [above-mentioned] in the state of selection are chosen, It has the 10th process into which the power-source ON time of day by which a setup is carried out [above-mentioned] is changed at the start time of the above-mentioned predetermined program.

[0008] In this invention, the program data of the receiving channel chosen by the user are extracted from the received broadcast signal. For example, image display and a voice output are performed by the program data of this extracted receiving channel, and the program data of that receiving channel are recorded on a record medium. Moreover, from this received broadcast signal, program guide information is extracted and a storage memorizes. At the time of power-source ON, the receiving channel at the time of power-source OFF is chosen. When the power-source ON time of day set up by the user in relation to the on-timer function hits in the middle of the predetermined program corresponding to the power-source ON time of day, it changes in the selection condition that a user can change the power-source ON time of day set up. For example, a user is made to have it chosen to change the power-source ON time of day set up on a screen. And when changing is chosen, the power-source ON time of day set up is changed automatically at the start time of the above-mentioned predetermined program, and it is made to be in the condition of power-source ON at the start time of the predetermined program. A power source serving as ON in the middle of a program, and giving a user displeasure by

this, is prevented.

[0009] Moreover, the program data sink concerning this invention A channel selection means to choose a receiving channel, and a data extraction means to extract the program data of the receiving channel chosen from the received broadcast signal with the channel selection means, An information extract means to extract program guide information from the received broadcast signal, An information storage means to memorize to a storage the program guide information extracted with this information extract means, An off time-of-day setting means to set up power-source off time of day, and the control means made into the condition of power-source OFF from the condition of power-source ON at the power-source off time of day set up, The program guide information on the predetermined program concerning the program data which are memorized by the storage and which are extracted with the above-mentioned data extraction means is referred to. When judged with it being satisfied with a time-of-day conditioning means to judge whether the conditions of hitting as the power-source OFF time of day by which a setup is carried out [above-mentioned] is the above-mentioned predetermined program are satisfied, and this time-of-day condition judging means of the above-mentioned conditions, When changing the state-transition means which makes it the selection condition which a user can choose whether to change the power-source off time of day by which a setup is carried out [above-mentioned], and this power-source off time of day by which a setup is carried out [above-mentioned] in the state of selection is chosen, It has a setting time change means to change the power-source off time of day by which a setup is carried out [above-mentioned] at the end time of the above-mentioned predetermined program.

[0010] Moreover, the program data receiving approach concerning this invention The 1st process which chooses a receiving channel, and the 2nd process which extracts the program data of the receiving channel chosen from the received broadcast signal at the 1st process, The 3rd process which extracts program guide information from the received broadcast signal, and the 4th process which memorizes to a storage the program guide information extracted at this 3rd process, The 5th process which sets up power-source off time of day, and the 6th process made into the condition of power-source OFF from the condition of power-source ON at the power-source off time of day set up, The program guide information on the predetermined program concerning the program data which are memorized by the storage and which are extracted at the 2nd process is referred to. When judged with it being satisfied with the 7th process which judges whether the conditions of hitting as the power-source OFF time of day by which a setup is carried out [above-mentioned] is the above-mentioned predetermined program are satisfied, and this 7th process of the above-mentioned conditions, When the 8th process which makes it the selection condition which a user can choose whether to change the power-source off time of day by which a setup is carried out [above-mentioned], and changing this power-source off time of day by which a setup is carried out [above-mentioned] in the state of selection are chosen, It has the 9th process into which the power-source off time of day by which a setup is carried out [above-mentioned] is changed at the end time of the above-mentioned predetermined program.

[0011] In this invention, the program data of the receiving channel chosen by the user are extracted from the received broadcast signal. For example, image display and a voice output are performed by the program data of this extracted receiving channel, and the program data of that receiving channel are recorded on a record medium. Moreover, from this received broadcast signal, program guide information is extracted and a storage memorizes. When the power-source off time of day set up by the user in relation to the off timer function hits in the middle of the predetermined program which is carrying out current viewing and listening, it changes in the selection condition that a user can change the power-source off time of day set up. For example, a user is made to have it chosen to change the power-source off time of day set up on a screen. And when changing is chosen, the power-source off time of day set up is changed at the end time of the above-mentioned predetermined program, and it is made to be in the condition of power-source OFF at the end time of the predetermined program. A power source becoming off in the middle of a program, and giving a user displeasure by this, is prevented.

[0012]

[Embodiment of the Invention] Hereafter, the gestalt of implementation of this invention is explained, referring to a drawing. Drawing 1 shows the configuration of the digital satellite broadcasting service receiver 100.

[0013] This receiver 100 has CPU (Central Processing Unit)101 which constitutes the controller for controlling actuation of the whole receiver. CPU101 is connected to the bus 102 of a control system and an information system. Data still more nearly required for actuation of CPU101, a program and ROM (read only memory)103 Japanese fonts etc. were further remembered to be, and EEPROM (Electrically Erasable and Programmable ROM)104 for memorizing program guide information, User Information, etc. which are extracted from the broadcast data DB so that it may mention later are connected to the bus 102.

[0014] Moreover, the receiver 100 has the hard disk drive (HDD) 105 which performs record playback of data, such as program data, to the hard disk (HD) as a record medium. This hard disk drive 105 is connected to the bus 102 through the hard disk controller (HD controller) 106.

[0015] Moreover, the receiver 100 has the remote control signal receive section 107 for receiving the remote control signal (henceforth a "remote control signal") SRM from the remote control transmitter 200, and supplying CPU101, and the IC card interface section 108 for equipping with IC card 300. These remote control signal receive section 107 and I card interface section 108 are connected to the bus 102, respectively.

[0016] Based on the limited receipt information sent through the IC card interface section 108 from CPU101, IC card 300 judges good/failure of viewing and listening, and when good, it has the function to send the key information on a scramble to CPU101 through the IC card interface section 108, while it has memorized the key information on a scramble. Moreover, a user (user) can use the remote control transmitter 200, and can operate selection of a channel (program number), a setup of power-source ON time of day or power-source OFF time of day, turning on and off of a power source, etc.

[0017] Moreover, the receiver 100 has the power circuit 109 which supplies a power source to each part. This power circuit 109 is connected to a bus 102 through the power-source controller 110. CPU101 can control a power circuit 109 through the power-source controller 110, and can make it the condition of power-source ON or power-source OFF.

[0018] Moreover, a receiver 100 has the antenna 111 which receives the digital broadcast signal (RF signal) from the satellite which is not illustrated, the tuner 112 which take out the digital broadcast signal of a predetermined RF channel from two or more digital broadcast signals received with this antenna 111, carry out recovery processing and error correction processing to that digital broadcast signal, and obtain broadcast data DB, and the scramble discharge section 113 which cancel the scramble given to this broadcast data DB.

[0019] A tuner 112 and the scramble discharge section 113 are connected to the bus 102, respectively. The broadcast data DB are for example, an MPEG 2 (Moving Picture ExpertsGroup 2) tolan port stream. The channel selection actuation in a tuner 112 is controlled by CPU101 based on actuation of a user's remote control transmitter 200.

[0020] Drawing 2 shows the packet configuration of an MPEG 2 transport packet, and four of 188 bytes of a head constitute the packet header. PID (Packet Identification: packet identifier) which shows the attribute of the individual stream (data stream) of an applicable packet is allotted to the packet header.

[0021] Moreover, the receiver 100 has the demultiplexer 114. This demultiplexer 114 extracts the packet of the video data of the channel (program number) specified by actuation of a user's remote control transmitter 200, and audio data from broadcast data DB' outputted from the scramble discharge section 113, and it extracts the packet of the addition data of the channel concerned while it outputs the video-data stream VDS and the audio data stream ADS which consist of those packets, and it outputs the addition data stream which consists of that packet. Furthermore, a demultiplexer 114 extracts and outputs the information on EPG (Electronic Program Guide) as program guide information etc. from broadcast data DB'. This demultiplexer 114 is connected to the bus 102, and that actuation is controlled by CPU101.

[0022] EPG is one of the services peculiar to digital multi-channel broadcast, and is used for displaying

the program under current broadcast and tuning in, or reserving a program several days after etc. Information, such as a program name, a channel (program number), broadcast initiation time, and broadcast termination time, is included in the information on this EPG. The information on EPG is described by the tables of the section format called SI (Service Information). SDT (Service Description Table) showing channel information and EIT (Event Information Table) showing event (program) information are shown in a typical table.

[0023] A channel number, a channel name, the contents of a channel, etc. are described by SDT, and PID has become "0x0011" fixed at it. Drawing 3 shows the table structure of SDT. The main contents are explained. Table ID shows the classification of a table, the network concerned is "0x42" and other networks are "0x46." By SDT, the service name of the service concerned, the contents of service, a service type, etc. are described by the existence of the scramble about each service multiplexed in the transport stream with TSID in which the table concerned exists, and the descriptor contained in SDT.

[0024] A program name, program start time, the outline, the genre, etc. are described by EIT, and PID has become "0x0012" fixed at it. Drawing 4 shows the table structure of EIT. The main contents are explained. The network concerned is ["0x4E" and other networks of Table ID] "0x4F." The information which starts the descriptor contained in EIT besides the start time of the event, duration, an advance condition, and the existence of a scramble at the tariff of a program name, a program genre, and a paper view program, an outline, etc. about two or more events (= program) for which one service (= program = channel) is constituted is usually described by EIT.

[0025] Moreover, the receiver 100 has the video signal processing section 115 which carries out data decompression processing to the video-data stream VDS outputted from a demultiplexer 114, and obtains video signal SV, and the audio signal processing section 116 which carries out data decompression processing to the audio data stream ADS outputted from a demultiplexer 114, and obtains audio signal SA. These video signal processing section 115 and the audio signal processing section 116 are connected to the bus 102, respectively.

[0026] Moreover, a receiver 100 generates the status signal for displaying an alphabetic character, a graphic form, etc. on a screen, and has the OSD (On Screen Display) processing section 117 which compounds and outputs the status signal to video signal SV obtained in the video signal processing section 115. This OSD processing section 117 is connected to the bus 102, and actuation of generating of that status signal, composition, etc. is controlled by CPU101.

[0027] Moreover, the receiver 100 has the monitoring device 118 which displays the image by bidet signal SV' outputted from the OSD processing section 117, and the loudspeaker 119 which outputs the voice by audio signal SA obtained in the audio signal processing section 116. Monitoring devices 118 are flat-panel displays, such as for example, a CRT (cathode-ray tube) display or LCD (liquid crystal display).

[0028] Next, actuation of the digital satellite broadcasting service receiver 100 shown in drawing 1 is explained.

[0029] In a tuner 112, the digital broadcast signal of predetermined RF channel is chosen from the digital broadcast signal of two or more RF channels received with an antenna 111, recovery processing and error correction processing are further performed to the digital broadcast signal of the predetermined RF channel, and the broadcast data DB are obtained.

[0030] The broadcast data DB outputted from a tuner 112 are supplied to a demultiplexer 114 through the scramble discharge section 113. And in a demultiplexer 114, the packet of the video data of a channel (program number) or audio data specified by actuation by a user's remote control transmitter 200 is separated from broadcast data DB' outputted from the scramble discharge section 113, and the video-data stream VDS and the audio data stream ADS which consist of those packets are obtained.

[0031] Furthermore, in a demultiplexer 114, the packet of the addition data of the channel specified by actuation of the user is separated from broadcast data DB', and the addition data stream which consists of the packet is obtained. This addition data stream is supplied to CPU101 through a bus 102. And the limited receipt information extracted by CPU101 is supplied to IC card 300 through a bus 102 and the IC card interface section 108 from this addition data stream.

[0032] In IC card 300, good/failure of viewing and listening are judged based on the limited receipt information. And when good, the key information on a scramble is sent to CPU101 through the IC card interface section 108 and a bus 102 from IC card 300. This key information is set to the scramble discharge section 113 by CPU101. Thereby, in the scramble discharge section 113, the video-data stream VDS which the scramble of the packet of the video data currently scrambled or audio data is canceled, therefore is obtained from a demultiplexer 114, and the audio data stream ADS start the data of which the scramble was canceled.

[0033] Moreover, while processing of data decompression etc. is performed in the video signal processing section 115 to the video-data stream VDS obtained from a demultiplexer 114 and video signal SV is generated, processing of data decompression etc. is performed in the audio signal processing section 116 to the audio data stream ADS similarly obtained from a demultiplexer 114, and audio signal SA is generated.

[0034] And video signal SV generated in the video signal processing section 115 is supplied to a monitoring device 118 through the OSD processing section 117. Thereby, the image by video signal SV is displayed on a monitoring device 118. Moreover, audio signal SA generated in the audio signal processing section 116 is supplied to a loudspeaker 119. Thereby, the voice by audio signal SA is outputted from a loudspeaker 119.

[0035] Moreover, by the demultiplexer 114, through CPU101, the information on EPG extracted from broadcast data DB' is supplied to EEPROM104, and is memorized. CPU101 uses the information on this EPG for modification of creation of the indicative data of a race card, the power-source ON time of day mentioned later, or power-source off time of day etc.

[0036] For example, when it is operated so that a user may display a genre predetermined with the remote control transmitter 200, and the race card of time, CPU101 creates the indicative data for displaying a race card including a predetermined genre and the program of time based on the information on EPG memorized by EEPROM104. And CPU101 supplies this indicative data to the OSD processing section 117 through a bus 102. In the OSD processing section 117, a status signal is generated based on the indicative data, and it is compounded by video signal SV to which the status signal is outputted from the video signal processing section 115. Thereby, video signal SV' outputted from the OSD processing section 117 becomes that by which the status signal was compounded by video signal SV outputted from the video signal processing section 115, and the predetermined genre mentioned above and the race card of time are displayed on a monitoring device 118.

[0037] Moreover, when there is image transcription actuation by a user's remote control transmitter 200, the video data and audio data which are obtained from the video signal processing section 115 and the audio signal processing section 116 are supplied to a hard disk drive 105, and are recorded on a hard disk. On the other hand, when there is playback actuation by a user's remote control transmitter 200, a video data and audio data are reproduced from a hard disk by the hard disk drive 105, and those data are supplied to the video signal processing section 115 and the audio signal processing section 116. The image by reproduced video signal SV is displayed on a monitoring device 118 by this, and the voice by reproduced audio signal SA is outputted from a loudspeaker 119.

[0038] Next, with reference to the flow chart of drawing 5, the control action of CPU101 when power-source ON time of day is set up in relation to an on-timer function is explained.

[0039] First, the information on a current receiving channel (program number) is memorized to EEPROM104 at a step ST 1. And it judges whether the information on EPG of the program (it considers as "Program A" hereafter) corresponding to the set-up power-source ON time of day in a current receiving channel is held to EEPROM104 at a step ST 2.

[0040] When not holding the information on EPG of Program A, it progresses to a step ST 3. A demultiplexer 114 is controlled by this step ST 3 to extract the information on EPG from broadcast data DB'. And the information on EPG extracted by the demultiplexer 114 at a step ST 4 is memorized to EEPROM104, and it returns to a step ST.2. On the other hand, when holding the information on EPG of Program A to EEPROM104, it is a step ST 5 and the start time Ta of Program A is compared with the set-up power-source ON time of day Tb with reference to the information on the EPG.

[0041] And the power-source ON time of day Tb set up at a step ST 6 is the back [start time / Ta / of Program A], and it judges whether the conditions of hitting as the power-source ON time of day Tb is Program A are satisfied. When satisfying conditions, a modification setting screen for a user to choose whether the set-up power-source ON time of day Tb as progressed to a step ST 7, for example, shown in drawing 9 is changed at the start time Ta of Program A is displayed on a monitoring device 118. The EPG information (a title, start time, end time) on the program A of (52ch) of the set-up power-source ON time of day (7:15) and the present receiving channel is also displayed on this modification setting screen, and a user can be taken as reference of selection.

[0042] Thus, when displaying a modification setting screen on a monitoring device 118, CPU101 supplies the indicative data of this modification setting screen to the OSD processing section 117 through a bus 102. In the OSD processing section 117, a status signal is generated based on the indicative data, and it is compounded by video signal SV to which the status signal is outputted from the video signal processing section 115. Thereby, the modification setting screen mentioned above is displayed on a monitoring device 118.

[0043] And when it chooses that a user changes the power-source ON time of day Tb at a step ST 8, it progresses to a step ST 9, the power-source ON time of day Tb set up by the user is changed at the start time Ta of Program A, it memorizes to EEPROM104, and processing is ended. On the other hand, when it chooses that a user does not change the power-source ON time of day Tb at a step ST 8, it progresses to step 10, the power-source ON time of day Tb set up by the user is memorized to EEPROM104 as it is, and processing is ended.

[0044] Moreover, when the power-source ON time of day Tb which is not satisfied with a step ST 6 of conditions and which was set up at the time [the time of day] is the same as the start time Ta of Program A After displaying a check screen (the power-source ON time of day Tb, EPG information on Program A, etc. which were set up are displayed) on a monitoring device 118 at a step ST 11, It progresses to a step ST 10, the power-source ON time of day Tb set up by the user is memorized to EEPROM104 as it is, and processing is ended.

[0045] Next, with reference to the flow chart of drawing 6 , the control action of CPU101 at the time of being about power-source OFF actuation is explained.

[0046] First, it judges whether power-source ON time of day is set up at a step ST 21. When power-source ON time of day is not set up, it progresses to a step ST 22, a power circuit 109 is controlled through the power-source controller 110, and it considers as the condition of power-source OFF immediately.

[0047] On the other hand, when power-source ON time of day is set up, it is a step ST 23 and judges whether the information on EPG of the program (it considers as "Program B" hereafter) corresponding to the set-up power-source ON time of day in a current receiving channel is held to EEPROM104.

[0048] When not holding the information on EPG of Program B, it progresses to a step ST 24. A demultiplexer 114 is controlled by this step ST 24 to extract the information on EPG from broadcast data DB'. And the information on EPG extracted by the demultiplexer 114 at a step ST 25 is memorized to EEPROM104, and it returns to a step ST 23.

[0049] On the other hand, when holding the information on EPG of Program B to EEPROM104, it progresses to a step ST 26. At this step ST 26, the information on the receiving channel at the time of a setup of the power-source ON time of day memorized by EEPROM104 is referred to, and it judges whether a current receiving channel is the same as the receiving channel at the time of a setup of a user's power-source ON time of day.

[0050] When not the same, it is a step ST 27 and start time Ta' of Program B is compared with the power-source ON time of day Tb set up with reference to the information on the EPG. And the power-source ON time of day Tb set up at a step ST 28 is the back [' / of Program B / start time Ta], and it judges whether the conditions of hitting as the power-source ON time of day Tb is Program B are satisfied. When satisfying conditions, a modification setting screen for a user to choose whether the power-source ON time of day Tb set up as progressed to a step ST 29, for example, shown in drawing 9 is changed into start time Ta' of Program B is displayed on a monitoring device 118.

[0051] And when it chooses that a user changes the power-source ON time of day Tb at a step ST 30, it progresses to a step ST 31, and the power-source ON time of day Tb memorized by EEPROM104 is changed into start time Ta' of Program B, and it progresses to a step ST 22 after that, and considers as the condition of power-source OFF. On the other hand, when it chooses that a user does not change the power-source ON time of day Tb at a step ST 30, it considers as the condition of power-source OFF immediately.

[0052] When a current receiving channel is the same as the receiving-at step ST 26 channel at the time of a setup of a user's power-source ON time of day, at moreover, the step ST 28 When not satisfying the conditions of hitting as the power-source ON time of day Tb set up is Program B a step ST 32 -- a monitoring device 118 -- a check screen (the power-source ON time of day Tb, EPG information on Program B, etc. which were set up are displayed) -- displaying -- after that -- a step ST 22 -- progressing -- a power source -- it considers as an off condition.

[0053] Next, with reference to the flow chart of drawing 7, the control action of CPU101 when power-source OFF time of day is set up in relation to an off-timer function is explained.

[0054] First, the information on a current receiving channel (program number) is memorized to EEPROM104 at a step ST 41. And it judges whether the information on EPG of the program (it considers as "Program C" hereafter) corresponding to the set-up power-source off time of day in a current receiving channel is held to EEPROM104 at a step ST 42.

[0055] When not holding the information on EPG of Program C, it progresses to a step ST 43. A demultiplexer 114 is controlled by this step ST 43 to extract the information on EPG from broadcast data DB'. And the information on EPG extracted by the demultiplexer 114 at a step ST 44 is memorized to EEPROM104, and it returns to a step ST 42. On the other hand, when holding the information on EPG of Program C to EEPROM104, it is a step ST 45 and the end time Tc of Program C is compared with the set-up power-source off time of day Td with reference to the information on the EPG.

[0056] And the power-source OFF time of day Td set up at a step ST 46 is a front [end time / Tc / of Program C], and it judges whether the conditions of hitting as the power-source OFF time of day Td is Program C are satisfied. When satisfying conditions, a modification setting screen for a user to choose whether the set-up power-source OFF time of day Td as progressed to a step ST 47, for example, shown in drawing 10 is changed at the end time Tc of Program C is displayed on a monitoring device 118. The EPG information (a title, start time, end time) on the program C of (52ch) of the set-up power-source OFF time of day (12:30) and the present receiving channel is also displayed on this modification setting screen, and a user can be taken as reference of selection.

[0057] Thus, when displaying a modification setting screen on a monitoring device 118, CPU101 supplies the indicative data of this modification setting screen to the OSD processing section 117 through a bus 102. In the OSD processing section 117, a status signal is generated based on the indicative data, and it is compounded by video signal SV to which the status signal is outputted from the video signal processing section 115. Thereby, the modification setting screen mentioned above is displayed on a monitoring device 118.

[0058] And when it chooses that a user changes the power-source off time of day Td at a step ST 48, it progresses to a step ST 49, the power-source off time of day Td set up by the user is changed at the end time Tc of Program C, it memorizes to EEPROM104, and processing is ended. On the other hand, when it chooses that a user does not change the power-source off time of day Td at a step ST 48, it progresses to a step ST 50, the power-source off time of day Td set up by the user is memorized to EEPROM104 as it is, and processing is ended.

[0059] Moreover, when the power-source OFF time of day Td which is not satisfied with a step ST 46 of conditions and which was set up at the time [the time of day] is the same as the end time Tc of Program C After displaying a check screen (the power-source off time of day Td, EPG information on Program C, etc. which were set up are displayed) on a monitoring device 118 at a step ST 51, It progresses to a step ST 50, the power-source off time of day Td set up by the user is memorized to EEPROM104 as it is, and processing is ended.

[0060] Next, with reference to the flow chart of drawing 8, the control action of CPU101 at the time of

becoming before fixed time amount (for example, one quota) from power-source OFF time of day is explained.

[0061] First, it judges whether the information on EPG of the program (it considers as "Program D" hereafter) corresponding to the set-up power-source off time of day in a current receiving channel is held at a step ST 61.

[0062] When not holding the information on EPG of Program D, it progresses to a step ST 62. A demultiplexer 114 is controlled by this step ST 62 to extract the information on EPG from broadcast data DB'. And the information on EPG extracted by the demultiplexer 114 at a step ST 63 is memorized to EEPROM104, and it returns to a step ST 61.

[0063] On the other hand, when holding the information on EPG of Program D to EEPROM104, it progresses to a step ST 64. At this step ST 64, the information on the receiving channel at the time of a setup of the power-source off time of day memorized by EEPROM104 is referred to, and it judges whether a current receiving channel is the same as the receiving channel at the time of a setup of a user's power-source off time of day.

[0064] When not the same, it is a step ST 65 and end time Tc' of Program D is compared with the power-source off time of day Td set up with reference to the information on EPG of Program D. And the power-source ON time of day Td set up at a step ST 66 is a front [' / of Program D / end time Tc], and it judges whether the conditions of hitting as the power-source OFF time of day Td is Program D are satisfied. When satisfying conditions, a modification setting screen for a user to choose whether the power-source OFF time of day Td set up as progressed to a step ST 67, for example, shown in drawing 10 is changed into end time Tc' of Program D is displayed on a monitoring device 118.

[0065] And when it chooses that a user changes the power-source off time of day Td at a step ST 68, it progresses to a step ST 69, the power-source off time of day Td memorized by EEPROM104 is changed into end time Tc' of Program D, and processing is ended. On the other hand, when it chooses that a user does not change the power-source off time of day Td at a step ST 68, processing is ended immediately.

[0066] When a current receiving channel is the same as the receiving-at step ST 64 channel at the time of a setup of a user's power-source off time of day, at moreover, the step ST 66 When not satisfying the conditions of hitting as the power-source OFF time of day Td set up is Program D, it is a step ST 70, and a check screen (the power-source OFF time of day Td, EPG information on Program D, etc. which were set up are displayed) is displayed on a monitoring device 118, and processing is ended after that.

[0067] As explained above, it sets in the gestalt of this operation. The time of a setup of power-source ON time of day, or when power-source off actuation is performed after that, When the set-up power-source ON time of day hits in the middle of the predetermined program corresponding to the power-source ON time of day, Since the modification setting screen for choosing whether the set-up power-source ON time of day is changed at the start time of the predetermined program is displayed on a monitoring device 118, a user can change the set-up power-source ON time of day at the start time of a predetermined program. Therefore, it can prevent a power source serving as ON in the middle of the predetermined program, and giving a user displeasure.

[0068] Moreover, as the power-source OFF time of day set up before fixed time amount from the time of a setup of power-source OFF time of day or its set-up power-source OFF time of day is the predetermined program to which it is viewing and listening now in the gestalt of this operation, when hitting, Since the modification setting screen for choosing whether the set-up power-source OFF time of day is changed at the end time of the predetermined program is displayed on a monitoring device 118, a user can change the set-up power-source OFF time of day at the end time of a predetermined program. Therefore, it can prevent a power source becoming off in the middle of the predetermined program, and giving a user displeasure.

[0069] In addition, in the gestalt of the above-mentioned implementation, although this invention is applied to a digital satellite broadcasting service receiver, as for this invention, it is needless to say that it is applicable also like receiving sets, such as other television receivers with the reception function of program guide information and a videocassette recorder.

[0070]

[Effect of the Invention] According to this invention, the time of a setup of power-source ON time of day, or when there is power-source off actuation after that When the power-source ON time of day set up hits with reference to program guide information in the middle of the predetermined program corresponding to the power-source ON time of day, while making to change the power-source ON time of day set up at the start time of the predetermined program into the condition that it can choose When changing by the user is chosen, it can prevent changing automatically the power-source ON time of day set up at the start time of the predetermined program, being in the condition of power-source ON in the middle of a program, and giving a user displeasure.

[0071] Moreover, as the power-source OFF time of day set up with reference to program guide information before fixed time amount from the time of a setup of power-source OFF time of day or its set-up power-source OFF time of day is the predetermined program to which it is viewing and listening now according to this invention, when hitting, While making to change the power-source off time of day set up at the end time of the predetermined program into the condition that it can choose When changing by the user is chosen, it can prevent changing automatically the power-source off time of day set up at the end time of the predetermined program, being in the condition of power-source OFF in the middle of a program, and giving a user displeasure.

[Translation done.]

* NOTICES *

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- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] A channel selection means to choose a receiving channel, and a data extraction means to extract the program data of the receiving channel chosen from the received broadcast signal with the above-mentioned channel selection means, An information extract means to extract program guide information from the broadcast signal by which reception was carried out [above-mentioned], An information storage means to memorize to a storage the above-mentioned program guide information extracted with the above-mentioned information extract means, While considering as the condition of power-source ON from the condition of an ON time-of-day setting means to set up power-source ON time of day, the actuation means for performing power-source off actuation, and power-source OFF at the power-source ON time of day set up The control means controlled so that the above-mentioned data extraction means extracts the program data in the receiving channel at the time of power-source OFF, The program guide information on the predetermined program concerning the program data which are memorized by the above-mentioned storage and which are extracted with the above-mentioned data extraction means is referred to. When judged with it being satisfied with a time-of-day condition judging means to judge whether the conditions of hitting as the power-source ON time of day by which a setup is carried out [above-mentioned] is the above-mentioned predetermined program are satisfied, and the above-mentioned time-of-day condition judging means of the above-mentioned conditions, When changing the state-transition means which makes it the selection condition which a user can choose whether to change the power-source ON time of day by which a setup is carried out [above-mentioned], and the power-source ON time of day by which a setup is carried out [above-mentioned] in the state of [above-mentioned] selection is chosen, The program data sink characterized by having a setting time change means to change the power-source ON time of day by which a setup is carried out [above-mentioned] at the start time of the above-mentioned predetermined program.

[Claim 2] The above-mentioned state-transition means is a program data sink according to claim 1 characterized by performing a screen display for a user choosing whether the power-source ON time of day by which a setup is carried out [above-mentioned] is changed.

[Claim 3] The program data sink according to claim 2 characterized by including the program guide information on the power-source ON time of day by which a setup is carried out [above-mentioned], and the above-mentioned predetermined program in the above-mentioned screen display.

[Claim 4] The above-mentioned time-of-day condition judging means is a program data sink according to claim 1 characterized by judging whether the above-mentioned conditions are satisfied when the above-mentioned power-source ON time of day is set up with the above-mentioned ON time-of-day setting means.

[Claim 5] The above-mentioned time-of-day condition judging means is a program data sink according to claim 1 characterized by judging whether the above-mentioned conditions are satisfied when power-source OFF actuation is performed by the above-mentioned actuation means.

[Claim 6] The 1st process which chooses a receiving channel, and the 2nd process which extracts the program data of the receiving channel chosen from the received broadcast signal at the 1st process of the

above, The 3rd process which extracts program guide information from the broadcast signal by which reception was carried out [above-mentioned], The 4th process which memorizes to a storage the above-mentioned program guide information extracted at the 3rd process of the above, While considering as the condition of power-source ON from the condition of the 5th process which sets up power-source ON time of day, the 6th process which performs power-source off actuation, and power-source OFF at the power-source ON time of day set up The 7th process controlled to extract the program data in the receiving channel at the time of power-source OFF from the broadcast signal by which reception was carried out [above-mentioned], The program guide information on the predetermined program concerning the program data which are memorized by the above-mentioned storage and which are extracted at the 2nd process of the above is referred to. When judged with it being satisfied with the 8th process which judges whether the conditions of hitting as the power-source ON time of day by which a setup is carried out [above-mentioned] is the above-mentioned predetermined program are satisfied, and the 8th process of the above of the above-mentioned conditions, When the 9th process which makes it the selection condition which a user can choose whether to change the power-source ON time of day by which a setup is carried out [above-mentioned], and changing the power-source ON time of day by which a setup is carried out [above-mentioned] in the state of [above-mentioned] selection are chosen, The program data receiving approach characterized by having the 10th process into which the power-source ON time of day by which a setup is carried out [above-mentioned] is changed at the start time of the above-mentioned predetermined program.

[Claim 7] The program data receiving approach according to claim 6 characterized by performing a screen display for a user choosing whether the power-source ON time of day by which a setup is carried out [above-mentioned] is changed at the 9th process of the above.

[Claim 8] The program data receiving approach according to claim 6 characterized by judging whether it is satisfied with the 8th process of the above of the above-mentioned conditions when the above-mentioned power-source ON time of day is set up at the 5th process of the above.

[Claim 9] The program data receiving approach according to claim 6 characterized by judging whether it is satisfied with the 8th process of the above of the above-mentioned conditions when the above-mentioned power-source OFF actuation is performed at the 6th process of the above.

[Claim 10] A channel selection means to choose a receiving channel, and a data extraction means to extract the program data of the receiving channel chosen from the received broadcast signal with the above-mentioned channel selection means, An information extract means to extract program guide information from the broadcast signal by which reception was carried out [above-mentioned], An information storage means to memorize to a storage the above-mentioned program guide information extracted with the above-mentioned information extract means, An off time-of-day setting means to set up power-source off time of day, and the control means made into the condition of power-source OFF from the condition of power-source ON at the power-source off time of day set up, The program guide information on the predetermined program concerning the program data which are memorized by the above-mentioned storage and which are extracted with the above-mentioned data extraction means is referred to. When judged with it being satisfied with a time-of-day conditioning means to judge whether the conditions of hitting as the power-source OFF time of day by which a setup is carried out [above-mentioned] is the above-mentioned predetermined program are satisfied, and the above-mentioned time-of-day condition judging means of the above-mentioned conditions, When changing the state-transition means which makes it the selection condition which a user can choose whether to change the power-source off time of day by which a setup is carried out [above-mentioned], and the power-source off time of day by which a setup is carried out [above-mentioned] in the state of [above-mentioned] selection is chosen, The program data sink characterized by having a setting time change means to change the power-source off time of day by which a setup is carried out [above-mentioned] at the end time of the above-mentioned predetermined program.

[Claim 11] The program data sink according to claim 10 characterized by performing a screen display for a user choosing whether the power-source off time of day set up is changed.

[Claim 12] The program data sink according to claim 11 characterized by including the program guide

information on the power-source off time of day by which a setup is carried out [above-mentioned], and the above-mentioned predetermined program in the above-mentioned screen display.

[Claim 13] The above-mentioned time-of-day condition judging means is a program data sink according to claim 10 characterized by judging whether the above-mentioned conditions are satisfied when the above-mentioned power-source OFF time of day is set up with the above-mentioned OFF time-of-day setting means.

[Claim 14] The above-mentioned time-of-day condition judging means is a program data sink according to claim 10 characterized by judging whether the above-mentioned conditions are satisfied when only fixed time amount becomes the last time of day from the power-source OFF time of day by which a setup is carried out [above-mentioned].

[Claim 15] The 1st process which chooses a receiving channel, and the 2nd process which extracts the program data of the receiving channel chosen from the received broadcast signal at the 1st process of the above, The 3rd process which extracts program guide information from the broadcast signal by which reception was carried out [above-mentioned], The 4th process which memorizes to a storage the above-mentioned program guide information extracted at the 3rd process of the above, The 5th process which sets up power-source off time of day, and the 6th process made into the condition of power-source OFF from the condition of power-source ON at the power-source off time of day set up, The program guide information on the predetermined program concerning the program data which are memorized by the above-mentioned storage and which are extracted at the 2nd process of the above is referred to. When judged with it being satisfied with the 7th process which judges whether the conditions of hitting as the power-source OFF time of day by which a setup is carried out [above-mentioned] is the above-mentioned predetermined program are satisfied, and the 7th process of the above of the above-mentioned conditions, When the 8th process which makes it the selection condition which a user can choose whether to change the power-source off time of day by which a setup is carried out [above-mentioned], and changing the power-source off time of day by which a setup is carried out [above-mentioned] in the state of [above-mentioned] selection are chosen, The program data receiving approach characterized by having the 9th process into which the power-source off time of day by which a setup is carried out [above-mentioned] is changed at the end time of the above-mentioned predetermined program.

[Claim 16] The program data receiving approach according to claim 15 characterized by performing a screen display for a user choosing whether the power-source off time of day by which a setup is carried out [above-mentioned] is changed at the 8th process of the above.

[Claim 17] The program data receiving approach according to claim 15 characterized by judging whether it is satisfied with the 7th process of the above of the above-mentioned conditions when the above-mentioned power-source OFF time of day is set up at the 5th process of the above.

[Claim 18] The program data receiving approach according to claim 15 characterized by judging whether it is satisfied with the 7th process of the above of the above-mentioned conditions when only fixed time amount becomes the last time of day from the power-source OFF time of day by which a setup is carried out [above-mentioned].

[Translation done.]